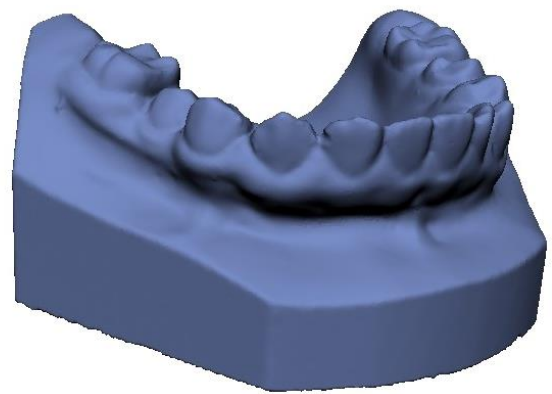


Dental Cast Scanning with the MultiDrive



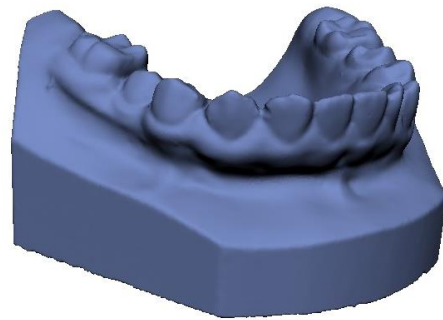
INTRODUCTION

What is the model's background?

This is a dental cast model that is commonly used in the dental practice. The approximate dimensions are about 1" tall, 2.5" wide and 2" long. The end goal is to capture the geometry using an automated solution with the MultiDrive. The exported data can then be used for applications such as archiving, orthodontics, digital reference and many more.



Before Picture



After Picture



Time required : **Less than 25 minutes (With ScanStudio HD PRO)**

Level of Difficulty : **Beginner**

DATA FILES

What files can I download?

Name of data file – Dental Cast (.NZIP)

Location of data file – [Download](#)

<https://s3-us-west-1.amazonaws.com/models.nextengine.com/Workflow+Documents/Dental+Cast+MultiDrive/Dental+Cast.nzip>

What will you learn in this course?

- How to set up the MultiDrive.
- How to scan objects with the MultiDrive.
- The weight and size limit of objects that can be placed on the MultiDrive.
- Learn the new MultiDrive settings.

STEPS

What are the steps to create a scanned model?

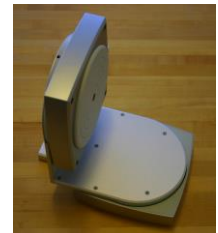
Step 1. MultiDrive Assembly

In this workflow we will be using the MultiDrive, a 2 axis turntable which spins and tilts to help you capture small objects without having to reposition them.



Step 1a. MultiDrive Hardware

Your MultiDrive will come with an Allen wrench, (3) screws, an L Bracket and AutoPositioner, pictured to the right.



Step 1b. Attach L Bracket

Attach the L Bracket to the AutoPositioner with 2 flat head screws using the Allen Wrench. This is the MultiDrive.



Step 1c. Attach MultiDrive to Scanner

Attach the MultiDrive to the bottom of the Scanner. Fasten a screw underneath the scanner for additional stability.



Step 1d. Plug in the MultiDrive

Plug the cable that extends out of the MultiDrive into the front of the scanner.



Step 2. Model Preparation

Most dental casts are made of plaster, which is a matte white color, and ideal for laser scanning, so no coating is required.

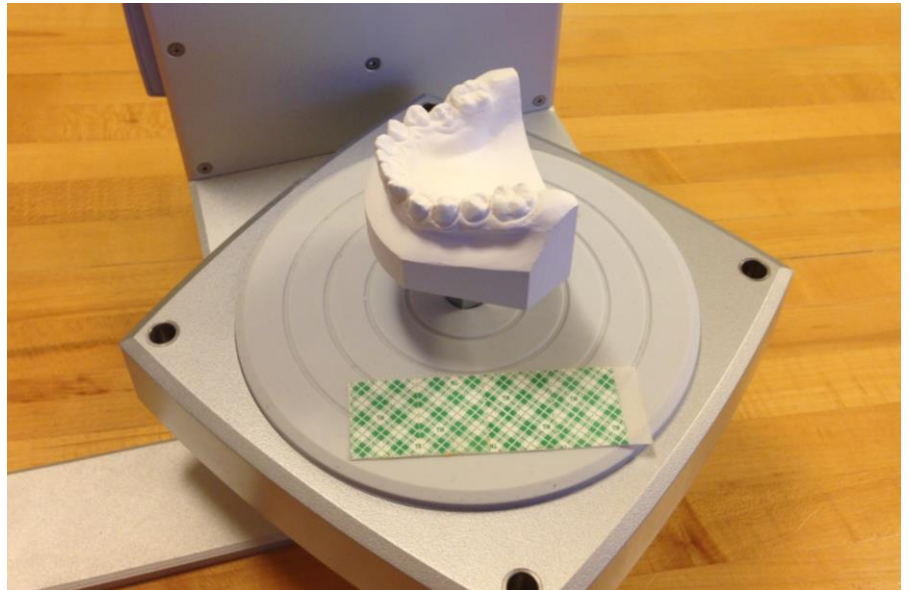
If an item is shiny, dark colored or clear, we advise applying some white powder or paint to the surface such as white hairspray, foot powder sprays or SKD-S2 Developer.



Step 3. Scan Setup

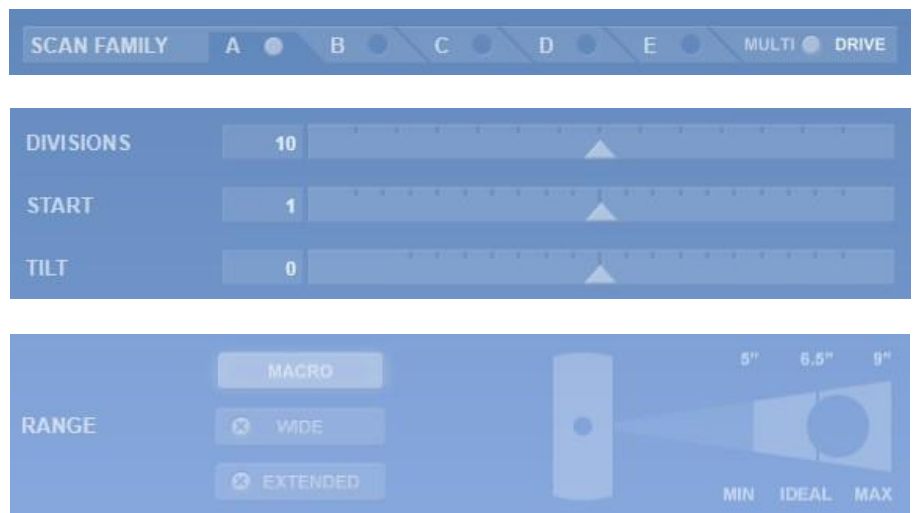
The scan envelope of the MultiDrive is the same as the Macro Mode, which will fit the dental cast. There are several ways to mount the cast, and for this application we recommend the metal platter and double sided tape.

Note: The MultiDrive has a 2 pound weight limit.



Step 4a. MultiDrive Scan Settings – What is Different

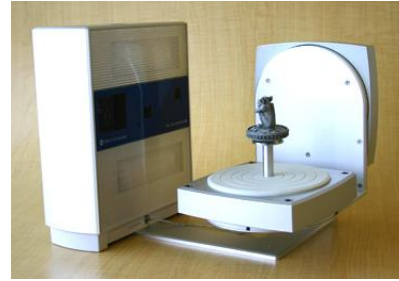
When you click on the green 'Scan' arrow in ScanStudio HD, you will notice some new settings that are available only when you use the MultiDrive. These include automating multiple scan families (A, B, C, D & E), 'Start' and 'Tilt' options and only the Macro range is available.



Step 4b. MultiDrive 'Start' and 'Tilt' Settings

The 'Start' option controls what position in the 360 that the item will start in. By moving the slider right or left you will rotate your object in a 360.

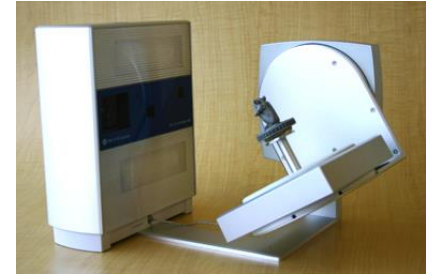
The 'Tilt' option controls the tilt of the MultiDrive. Neutral tilt is set to 0, when the MultiDrive is parallel to the desk. Negative tilt captures the bottom of the object and tilts the MultiDrive away from the scanner up to 35°. Positive tilt captures the top of the object and tilts the MultiDrive towards the scanner up to 45°.



Neutral Tilt



Negative Tilt



Positive Tilt

Step 5. Scan A Settings

Please use the following settings for scan A to capture the sides of the dental cast:

Positioning: 360

Divisions: 7

Start: 0

Tilt: -10

Points / In²: SD 10k

Target: Light

Range: Macro

Note: It is recommended to make sure your first scan is a 360 to ensure satisfactory alignment on all scans.



Step 6. Scan B Settings

Please use the following settings for scan B to capture the top of the dental cast:

Positioning: 360

Divisions: 7

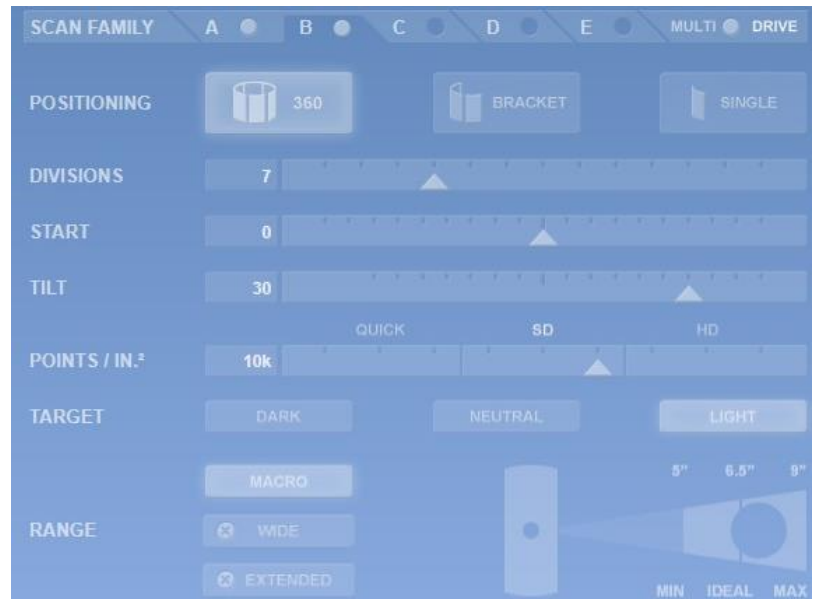
Start: 0

Tilt: 30

Points / In²: SD 10k

Target: Light

Range: Macro



Step 7. Activate all Scans

Before starting your scan, activate each of your scans so they run. You can do this by clicking the circle next to A, B or any other scan family. When the circle is white, the scan is activated. Click the green 'Start' arrow when you are ready to begin scanning.



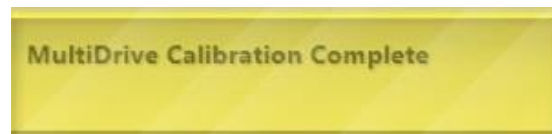
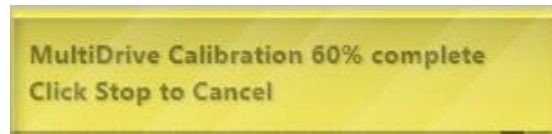
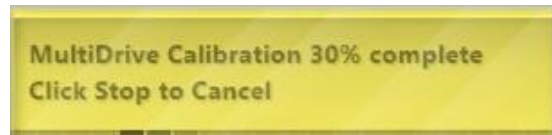
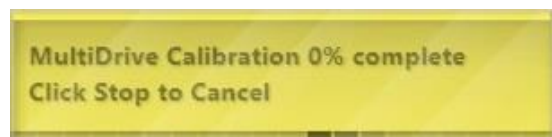
Only Scan A Selected



Scans A & B Selected

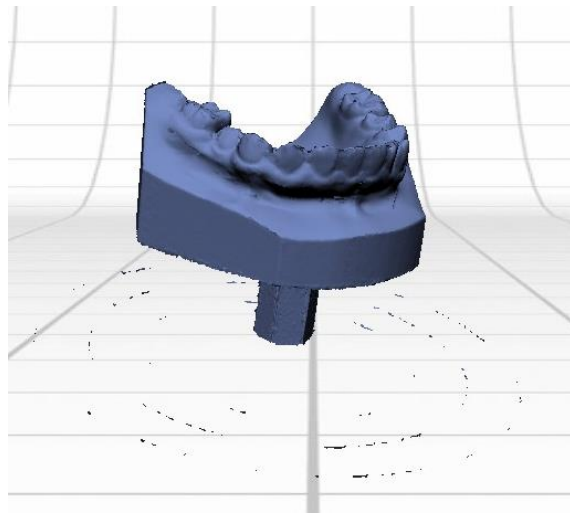
Step 8. Calibration

After starting your scan, the MultiDrive will automatically run a calibration sequence. This will automatically run a sequence of three single scans with known turn and tilt angles. After the first scan it will say 30% complete, then 60% for the second, etc. The software will use this data to register the position of your model and allow the part to be automatically aligned.



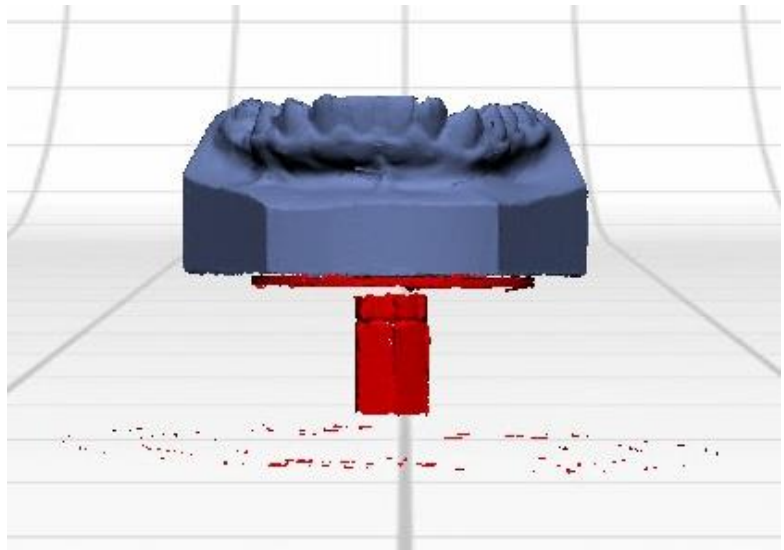
Step 9. Alignment

When your scans are complete, both scan families – A & B – will be automatically aligned together. No pin placement needed.



Step 10. Trim

Trim away the excess data, particularly the base and any additional data that was collected that is not the dental cast. You can also trim away any distorted data.



Step 11. Fuse

Fuse your scans using the following settings:

Simplification Tolerance: 0.000"

Hole Fill: Create water-tight

Texture Blending: 10

Resolution Ratio: 0.9

